



[4910-13-P]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2015-3146; Directorate Identifier 2014-NM-249-AD]

RIN 2120-AA64

Airworthiness Directives; The Boeing Company Airplanes

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: We propose to adopt a new airworthiness directive (AD) for certain The Boeing Company Model 777-200 series airplanes. This proposed AD was prompted by an evaluation by the design approval holder (DAH) indicating that the skin lap splices at certain stringers in certain fuselage sections are subject to widespread fatigue damage (WFD). This proposed AD would require inspections to detect cracking of fuselage skin lap splices in certain fuselage sections, and corrective actions if necessary; modification of left-side and right-side lap splices; and post-modification repetitive inspections for cracks in the modified lap splices, and corrective actions if necessary. We are proposing this AD to detect and correct fatigue cracking of the skin lap splices, and consequent risk of sudden decompression and the inability to sustain limit flight and pressure loads.

DATES: We must receive comments on this proposed AD by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

- Federal eRulemaking Portal: Go to <http://www.regulations.gov>. Follow the instructions for submitting comments.

- Fax: 202-493-2251.
- Mail: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590.
- Hand Delivery: Deliver to Mail address above between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

For service information identified in this proposed AD, contact Boeing Commercial Airplanes, Attention: Data & Services Management, P. O. Box 3707, MC 2H-65, Seattle, WA 98124-2207; telephone 206-544-5000, extension 1; fax 206-766-5680; Internet <https://www.myboeingfleet.com>. You may view this referenced service information at the FAA, Transport Airplane Directorate, 1601 Lind Avenue SW., Renton, WA. For information on the availability of this material at the FAA, call 425-227-1221. It is also available on the Internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2015-3146.

Examining the AD Docket

You may examine the AD docket on the Internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2015-3146; or in person at the Docket Management Facility between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this proposed AD, the regulatory evaluation, any comments received, and other information. The street address for the Docket Office (phone: 800-647-5527) is in the ADDRESSES section. Comments will be available in the AD docket shortly after receipt.

FOR FURTHER INFORMATION CONTACT: Haytham Alaidy, Aerospace Engineer, Airframe Branch, ANM-120S, FAA, Seattle Aircraft Certification Office, 1601 Lind Avenue SW., Renton, WA 98057-3356; phone: 425-917-6573; fax: 425-917-6590; email: Haytham.Aaidy@faa.gov.

SUPPLEMENTARY INFORMATION:

Comments Invited

We invite you to send any written relevant data, views, or arguments about this proposal. Send your comments to an address listed under the ADDRESSES section. Include “Docket No. FAA-2015-3146; Directorate Identifier 2014-NM-249-AD” at the beginning of your comments. We specifically invite comments on the overall regulatory, economic, environmental, and energy aspects of this proposed AD. We will consider all comments received by the closing date and may amend this proposed AD because of those comments.

We will post all comments we receive, without change, to <http://www.regulations.gov>, including any personal information you provide. We will also post a report summarizing each substantive verbal contact we receive about this proposed AD.

Discussion

Structural fatigue damage is progressive. It begins as minute cracks, and those cracks grow under the action of repeated stresses. This can happen because of normal operational conditions and design attributes, or because of isolated situations or incidents such as material defects, poor fabrication quality, or corrosion pits, dings, or scratches. Fatigue damage can occur locally, in small areas or structural design details, or globally. Global fatigue damage is general degradation of large areas of structure with similar structural details and stress levels. Multiple-site damage is global damage that occurs in a large structural element such as a single rivet line of a lap splice joining two large skin panels. Global damage can also occur in multiple elements such as adjacent frames or stringers. Multiple-site-damage and multiple-element-damage cracks are typically too small initially to be reliably detected with normal inspection methods. Without intervention, these cracks will grow, and eventually compromise the structural integrity

of the airplane, in a condition known as WFD. As an airplane ages, WFD will likely occur, and will certainly occur if the airplane is operated long enough without any intervention.

The FAA's WFD final rule (75 FR 69746, November 15, 2010) became effective on January 14, 2011. The WFD rule requires certain actions to prevent structural failure due to WFD throughout the operational life of certain existing transport category airplanes and all of these airplanes that will be certificated in the future. For existing and future airplanes subject to the WFD rule, the rule requires that DAHs establish a limit of validity (LOV) of the engineering data that support the structural maintenance program. Operators affected by the WFD rule may not fly an airplane beyond its LOV, unless an extended LOV is approved.

The WFD rule (75 FR 69746, November 15, 2010) does not require identifying and developing maintenance actions if the DAHs can show that such actions are not necessary to prevent WFD before the airplane reaches the LOV. Many LOVs, however, do depend on accomplishment of future maintenance actions. As stated in the WFD rule, any maintenance actions necessary to reach the LOV will be mandated by airworthiness directives through separate rulemaking actions.

In the context of WFD, this action is necessary to enable DAHs to propose LOVs that allow operators the longest operational lives for their airplanes, and still ensure that WFD will not occur. This approach allows for an implementation strategy that provides flexibility to DAHs in determining the timing of service information development (with FAA approval), while providing operators with certainty regarding the LOV applicable to their airplanes.

During Model 777 fatigue testing, skin cracks were found at the stringer S-14 lap splice. These cracks initiated at scribe lines that were made inadvertently in production when maskant was removed from the skin panels. This condition, if not corrected, could result in fatigue cracking of the skin lap splices, and consequent reduced structural

integrity of the airplane and could cause sudden decompression and the inability to sustain limit flight and pressure loads.

Related Service Information under 1 CFR part 51

We reviewed Boeing Alert Service Bulletin 777-53A0052, dated October 10, 2014. The service bulletin describes procedures for inspections to detect cracking of fuselage skin lap splices and repairs, modification to the skin lap splices; and repetitive inspections for cracks in the modified lap splices and repairs. This service information is reasonably available because the interested parties have access to it through their normal course of business or by the means identified in the ADDRESSES section of this NPRM.

Other Related Service Information

Boeing Alert Service Bulletin 777-53A0052, dated October 10, 2014, specifies concurrent accomplishment of an inspection of the fuselage skin for external scribe lines, skin cracks, and repair, which are described in Boeing Service Bulletin 777-53A0054, Revision 1, dated November 4, 2010. The actions described in Boeing Service Bulletin 777-53A0054, Revision 1, dated November 4, 2010, are required by AD 2013-07-11, Amendment 39-17415 (78 FR 22185, April 15, 2013); therefore, those actions are not required in this NPRM.

Boeing Alert Service Bulletin 777-53A0052, dated October 10, 2014, describes doing inspections for cracks in the skin of the stringer lap splices and repair, which are also described in Boeing Alert Service Bulletin 777-53A0043, dated November 9, 2011. The actions described in Boeing Alert Service Bulletin 777-53A0043, dated November 9, 2011, are required by AD 2012-14-03, Amendment 39-17117 (77 FR 42962, July 23, 2012); therefore, those actions are not required in this NPRM.

FAA's Determination

We are proposing this AD because we evaluated all the relevant information and determined the unsafe condition described previously is likely to exist or develop in other products of the same type design.

Proposed AD Requirements

This proposed AD would require accomplishing the actions specified in the service information described previously, except as discussed under “Differences Between this Proposed AD and the Service Information.” Refer to Boeing Alert Service Bulletin 777-53A0052, dated October 10, 2014, for information on the procedures and compliance times.

The phrase “corrective actions” is used in this proposed AD. “Corrective actions” are actions that correct or address any condition found. Corrective actions in an AD could include, for example, repairs.

Explanation of Compliance Time

The compliance time for the modification specified in this proposed AD for addressing WFD was established to ensure that discrepant structure is modified before WFD develops in airplanes. Standard inspection techniques cannot be relied on to detect WFD before it becomes a hazard to flight. We will not grant any extensions of the compliance time to complete any AD-mandated service bulletin related to WFD without extensive new data that would substantiate and clearly warrant such an extension.

Differences Between this Proposed AD and the Service Information

The service bulletin specifies to contact the manufacturer for instructions on how to repair certain conditions, but this proposed AD would require repairing those conditions in one of the following ways:

- In accordance with a method that we approve; or

- Using data that meet the certification basis of the airplane, and that have been approved by the Boeing Commercial Airplanes Organization Designation Authorization (ODA) whom we have authorized to make those findings.

Explanation of “RC (Required for Compliance)” Steps in Service Information

The FAA worked in conjunction with industry, under the Airworthiness Directive Implementation Aviation Rulemaking Committee (ARC), to enhance the AD system. One enhancement was a new process for annotating which steps in the service information are required for compliance with an AD. Differentiating these steps from other tasks in the service information is expected to improve an owner’s/operator’s understanding of crucial AD requirements and help provide consistent judgment in AD compliance. The steps identified as RC (required for compliance) in any service information identified previously have a direct effect on detecting, preventing, resolving, or eliminating an identified unsafe condition.

For service information that contains steps that are labeled as Required for Compliance (RC), the following provisions apply: (1) the steps labeled as RC, including substeps under an RC step and any figures identified in an RC step, must be done to comply with the AD, and an AMOC is required for any deviations to RC steps, including substeps and identified figures; and (2) steps not labeled as RC may be deviated from using accepted methods in accordance with the operator’s maintenance or inspection program without obtaining approval of an AMOC, provided the RC steps, including substeps and identified figures, can still be done as specified, and the airplane can be put back in an airworthy condition.

Costs of Compliance

We estimate that this proposed AD affects 21 airplanes of U.S. registry.

We estimate the following costs to comply with this proposed AD:

Estimated costs

Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
Inspection and modification	2,713 work-hours X \$85 per hour = \$230,605	\$0	\$230,605	\$4,842,705
Post-modification inspection	1,391 work-hours X \$85 per hour = \$118,235 per inspection cycle	\$0	\$118,235 per inspection cycle	\$2,482,935 per inspection cycle

We have received no definitive data that would enable us to provide cost estimates for the on-condition actions specified in this proposed AD.

According to the manufacturer, some of the costs of this proposed AD may be covered under warranty, thereby reducing the cost impact on affected individuals. We do not control warranty coverage for affected individuals. As a result, we have included all available costs in our cost estimate.

Authority for this Rulemaking

Title 49 of the United States Code specifies the FAA’s authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII: Aviation Programs, describes in more detail the scope of the Agency’s authority.

We are issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: “General requirements.” Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

Regulatory Findings

We determined that this proposed AD would not have federalism implications under Executive Order 13132. This proposed AD would not have a substantial direct effect on the States, on the relationship between the national Government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify this proposed regulation:

- (1) Is not a “significant regulatory action” under Executive Order 12866,
- (2) Is not a “significant rule” under the DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979),
- (3) Will not affect intrastate aviation in Alaska, and
- (4) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

The Proposed Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA proposes to amend 14 CFR part 39 as follows:

PART 39 - AIRWORTHINESS DIRECTIVES

- 1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

- 2. The FAA amends § 39.13 by adding the following new airworthiness directive (AD):

The Boeing Company: Docket No. FAA-2015-3146; Directorate Identifier 2014-NM-249-AD.

(a) Comments Due Date

We must receive comments by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(b) Affected ADs

None.

(c) Applicability

This AD applies to The Boeing Company Model 777-200 series airplanes, certified in any category; as identified in Boeing Alert Service Bulletin 777-53A0052, dated October 10, 2014.

(d) Subject

Air Transport Association (ATA) of America Code 53, Fuselage.

(e) Unsafe Condition

This AD was prompted by an evaluation by the design approval holder (DAH) indicating that the skin lap splices at certain stringers in certain fuselage sections are subject to widespread fatigue damage (WFD). We are issuing this AD to detect and correct fatigue cracking of the skin lap splices, and consequent risk of sudden decompression and the inability to sustain limit flight and pressure loads.

(f) Compliance

Comply with this AD within the compliance times specified, unless already done.

(g) Inspections and Corrective Actions

Except as provided by paragraph (h)(1) of this AD, at the applicable time specified in paragraph 1.E., “Compliance,” of Boeing Alert Service Bulletin 777-53A0052, dated October 10, 2014: Do Part 1, inspection “A,” of the modification area for cracks; Part 2, inspection “B,” of the modification area for cracks; and Part 3, inspection “C,” of the modification area for scribe lines and cracks; as applicable; and do all applicable corrective actions; in accordance with the Accomplishment Instructions of

Boeing Alert Service Bulletin 777-53A0052, dated October 10, 2014, except as provided by paragraph (h)(2) of this AD. Do all applicable corrective actions before further flight.

(1) Inspection “A” includes an external phased array ultrasonic inspection for cracks in the lower/overlapped skin of the stringer S-14 left and right (L/R) lap splices between fuselage station 655 and station 1434, and an open hole high frequency eddy current (HFEC) inspection for skin cracks at the upper and lower fastener rows of the stringer lap splices.

(2) Inspection “B” includes the inspections specified in paragraphs (g)(2)(i) through (g)(2)(iv) of this AD.

(i) A detailed inspection for cracks of any skin panel common to a stringer lap splice between fuselage station 655 and station 1434 that has a scribe line 0.001 inch or deeper.

(ii) Either an ultrasonic inspection or a surface HFEC inspection for cracks (depending on the location of the scribe line(s)) of any skin panel common to a stringer lap splice between fuselage station 655 and station 1434 that has a scribe line 0.001 inch or deeper.

(iii) An external phased array ultrasonic inspection for cracks in the lower/overlapped skin of the stringer S-14L/R lap splices between fuselage station 655 and station 1434.

(iv) An open hole HFEC inspection for skin cracks at the upper and lower fastener rows of the stringer lap splices.

(3) Inspection “C” includes the inspections for scribe lines and cracks specified in paragraphs (g)(3)(i), (g)(3)(ii), and (g)(3)(iii) of this AD on stringer S-14L/R lap splice between fuselage station 655 and station 1434 on both sides of the airplane.

(i) A detailed inspection for scribe lines. If any scribe line is found during the inspection required by this paragraph, the actions include the inspections specified in paragraphs (g)(3)(i)(A) and (g)(3)(i)(B) of this AD.

(A) A detailed inspection for cracks of the scribe line area(s).

(B) Either an ultrasonic inspection or a surface HFEC inspection for cracks (depending on the location of the scribe line(s)).

(ii) An external phased array ultrasonic inspection for cracks in the lower/overlapped skin of the stringer lap splices between fuselage station 655 and station 1434.

(iii) An open hole HFEC inspection for skin cracks at the upper and lower fastener rows of the stringer S-14L/R lap splices.

(h) Exceptions to Service Information Specifications

(1) Where Paragraph 1.E., “Compliance,” of Boeing Alert Service Bulletin 777-53A0052, dated October 10, 2014, specifies a compliance time “after the original issue date of this service bulletin,” this AD requires compliance within the specified compliance time “after the effective date of this AD.”

(2) If, during accomplishment of any inspection required by this AD, any condition is found for which Boeing Alert Service Bulletin 777-53A0052, dated October 10, 2014, specifies to contact Boeing for special repair instructions or supplemental instructions for the modification, and specifies that action as “RC” (Required for Compliance): Before further flight, do the repair or modification using a method approved in accordance with the procedures specified in paragraph (k) of this AD.

(i) Lap Splice Modification

At the applicable time specified in paragraph 1.E., “Compliance,” of Boeing Alert Service Bulletin 777-53A0052, dated October 10, 2014: Do the left-side and right-side lap splice modification, in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 777-53A0052, dated October 10, 2014, except as provided by paragraph (h)(2) of this AD.

(j) Post-modification Inspections and Corrective Action

At the applicable time specified in paragraph 1.E., “Compliance,” of Boeing Alert Service Bulletin 777-53A0052, dated October 10, 2014: Do a post-modification internal surface HFEC inspection for skin cracks in the modified lap splices on both sides of the airplane; and do all applicable corrective actions; in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 777-53A0052, dated October 10, 2014, except as provided by paragraph (h)(2) of this AD. Do all applicable corrective actions before further flight. Repeat the inspection of the modified lap splices thereafter at the applicable intervals specified in paragraph 1.E., “Compliance,” of Boeing Alert Service Bulletin 777-53A0052, dated October 10, 2014.

(k) Alternative Methods of Compliance (AMOCs)

(1) The Manager, Seattle Aircraft Certification Office (ACO), FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the manager of the ACO, send it to the attention of the person identified in paragraph (l)(1) of this AD. Information may be emailed to: 9-ANM-Seattle-ACO-AMOC-Requests@faa.gov.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

(3) An AMOC that provides an acceptable level of safety may be used for any repair required by this AD if it is approved by the Boeing Commercial Airplanes Organization Designation Authorization (ODA) that has been authorized by the Manager, Seattle ACO, to make those findings. For a repair method to be approved, the repair must meet the certification basis of the airplane, and the approval must specifically refer to this AD.

(4) Except as required by paragraph (h)(2) of this AD: For service information that contains steps that are labeled as Required for Compliance (RC), the provisions of paragraphs (k)(4)(i) and (k)(4)(ii) apply.

(i) The steps labeled as RC, including substeps under an RC step and any figures identified in an RC step, must be done to comply with the AD. An AMOC is required for any deviations to RC steps, including substeps and identified figures.

(ii) Steps not labeled as RC may be deviated from using accepted methods in accordance with the operator's maintenance or inspection program without obtaining approval of an AMOC, provided the RC steps, including substeps and identified figures, can still be done as specified, and the airplane can be put back in an airworthy condition.

(l) Related Information

(1) For more information about this AD, contact Haytham Alaidy, Aerospace Engineer, Airframe Branch, ANM-120S, FAA, Seattle ACO, 1601 Lind Avenue SW., Renton, WA 98057-3356; phone: 425-917-6573; fax: 425-917-6590; email: Haytham.Aaidy@faa.gov.

(2) For service information identified in this AD, contact Boeing Commercial Airplanes, Attention: Data & Services Management, P. O. Box 3707, MC 2H-65, Seattle, WA 98124-2207; telephone 206-544-5000, extension 1; fax 206-766-5680; Internet <https://www.myboeingfleet.com>. You may view this referenced service information at the FAA, Transport Airplane Directorate, 1601 Lind Avenue SW., Renton, WA. For information on the availability of this material at the FAA, call 425-227-1221.

Issued in Renton, Washington, on August 17, 2015.

Kevin Hull,
Acting Manager,
Transport Airplane Directorate,
Aircraft Certification Service.

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